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Report Foresees Snags for Distributed Systems Users

NEW YORK — Users who opt for smaller distributed systems as a lower-cost alternative to central general purpose computers may be in for a surprise, a report on the computer industry from Arthur D. Little indicates.

The report, which analyzed some of the hidden economic and technological shortcomings of distributed systems, stated that while small computer systems offer more computing power per dollar, they also involve higher total peripheral equipment costs. The larger mainframe computer systems still offer economy of scale, it said.

"If the local computer is to be versatile and itself support multiple modes of use (batch, time-sharing and perhaps transaction processing) it cannot be below a certain size. It must have a large memory and contain the necessary systems program and probably an extensive complement of peripherals."

Smaller systems, the report continues, are often more difficult to use than large systems.

"The language processors, telecommunications systems programs, file processors and operating systems of the general-purpose systems have evolved to a high level of functionality over the years.

"Users often do not fully appreciate them until they try to use the more limited products offered with the smaller machines. The gap in performance will narrow with time, but the providers of systems programs for the smaller systems will have difficulty catching up with the systems programs offered for large general-purpose systems, particularly since the latter are continually evolving," it noted.

The report said users of distributed computer networks have rarely achieved the complete freedom they sought. "If they want to intercommunicate, they must abide by common communications standards. If they want to use one another's machines, they must abide by common programming language and configuration standards (at best) or use identical systems from a common manufacturer (at worst).

'Must Be Documented'

"If the applications they develop are to be understood by others for their own use, or for modification and

maintenance, the applications must be prepared and documented in meticulous conformity with common standards.

The proponents of networks designed to provide all these services — intercommunications, equipment sharing, and application sharing — are confronted by a more difficult management problem than they had with centralized general-purpose systems, where all users were automatically constrained by the standards of a single system," according to the ADL report.

Until distributed computer networks have the ability to handle complex applications conveniently and flexibly, says the report, "The general-purpose system will remain the dominant data processing tool. However, its dominance will be steadily eroded as more and more users adopt distributed computer networks for the applications these systems do handle well. Such adoptions are being fostered by several of the computer manufacturers, whose approaches are illustrative of the present state of the art on computer networking."

One approach being used is to provide the interfaces and systems programs for interconnecting small computers, and then to invite users to develop their applications as best as they can with the limited software tools available for the smaller machines.

This approach, the report says, "is typified by Digital Equipment with its DECnet offering, and has been successful with users who are willing to be pioneers, such as Educom, Citicorp and Bank of America." By following this approach, a producer can hope to get an early foothold in the market and later expand it as more versatile software tools become available, according to the report.

NCR Approach

A second approach, it was noted, is to "concentrate only on applications within the state of the art of distributed

computer networking. A company following this path would provide complete software for these applications and hope to grow through early dominance of a market which, although specialized, is amply large." It called NCR the main proponent of this approach, saying the firm offers packaged networks for retailing and banking applications. "Our studies indicate that a great deal of growth is in store for these application areas as electronic funds transfer networks evolve; if NCR could dominate this area, it should be able to grow substantially without having major positions elsewhere," it said.

A third approach cited by the report is IBM's system network architecture. As the state of the art permits, IBM is slowly moving its systems programs for complex applications outward from the central general-purpose computer without ever offering systems programs of lesser functionality, according to ADL.

"This approach," says the report, "reflects IBM's recognition that most users neither are willing to be pioneers nor are in industries with only simple applications. The theory behind this approach is that most users want, above all, the best software tools available for their applications, and are probably willing to wait for the full benefits of distributed computer networks until the networks can offer the best software tools."

To summarize, the report says, distributed computer networks have already made considerable inroads into the dominance of the centralized general-purpose computer, and substantial opportunities for further growth exist.

"The general-purpose system will hold its own fairly well, however, until network systems programs are available for handling complex applications. This might take 5 years and during the interim, manufacturers may offer users a wide and probably confusing diversity of alternatives."

Survey Uncovers Disagreement On Future of Pricing for T/S

By Molly Upton
Of the CW Staff

There's not much agreement among time-sharing vendors over pricing trends in the industry, a *Computerworld* survey has found.

While one vendor expects prices to increase, another cited price competition and yet another sees stable pricing conditions.

There's also some disagreement over whether time-sharing firms are moving to take some of the black art out of calculating the costs of their services and to make them easier to understand by the consumer.

One indicated his firm is using transaction pricing on at least some applications. Transaction pricing involves charging a set fee for an identifiable task, such as an item update.

Currently most services charge on the basis of an algorithm calculating the resources used, and these have various names and include different proportions of CPU and I/O resources.

John Lewis, president of Real Decisions Corp., a Stamford, Conn., consulting firm, said the only trend toward standardization of pricing among vendors is that several are aggressively studying a move to transaction pricing.

But Russ Gloersen, manager of product support services at National CSS (NCSS), said he thinks several firms are moving in the direction of more simplified rates that are easier for consumers to understand and compare.

NCSS is planning to extend its Application Resource Unit (ARU) which charges one price to various portions of systems whose prices were previously different. This scheme is in effect on its Nomad data base package.

This would not be a price break, but rather an equivalent to what users are now paying, Gloersen explained.

Originally it was reasonable to charge on the basis of CPU utilization since much of the work on time-sharing systems was program development and programmers are concerned with CPU utilization, he said, adding more emphasis is now on applications and CPU use is no longer the principal criterion.

While transaction pricing would facilitate comparison shopping, it tends to be applicable only to applications packages where the unit can be defined in end-user terms, Lewis said. Also, it is not easy for vendors to establish prices under this method, he added.

Although many firms are studying transaction pricing, no one wants to be first, Lewis said. The first firm offering transaction pricing will receive a lot of attention, but it will also be the target for underpricing by other firms, he believes.

Rapidata, Inc. has instituted transaction pricing on its cash management service and plans to implement it on other applications, especially those involving the firm's Rapidvoice Touch-Tone phone applications, according to Harvey Hendler, marketing manager for capabilities.

Transaction pricing makes marketing easier because the price is predictable by the consumer and overcomes a lot of uncertainties in doing business with time-sharing companies, he said.

Hendler conceded, however, that developing pricing for transaction processing is quite difficult technically.

Future of Pricing

Will prices go up or down?

Gloersen said he'd heard rumors of indiscriminate discounting where vendors use discounts without any present volume requirements in order to induce users to subscribe to their service.

NCSS, he observed, offers discounts to large customers whose costs exceed a specified amount.

Rather than seeing price cutting, Hendler anticipates price increases in the future by several vendors that he declined to name.

Remote computing services have stabilized and most companies are successful not on the basis of price, but on the merit of their services, which are hopefully unique, he said.

Rapidata, which specializes in services to financial institutions, recently dropped prices on storage of files accessible by its data base system. Rather than a reaction to what other firms were doing, Hendler said this was "just a realistic approach to the financial marketplace."

Among those raising prices was Manufacturing Data Systems, Inc. of Ann Arbor, Mich., which increased prices about 10%.

Tymshare, Inc. raised its connect rates on its Digital Equipment Corp. Decsystem-10s and IBM 370s on March 1 from about \$10- to \$12/hour on the prime shift and also raised connect charges on nonprime-time shifts from \$5- to \$6/hour.

This was an adjustment to bring the firm more into line with prevailing rates, although Tymshare's connect prices are still comparatively low, he said.

He doesn't foresee any radical price cutting in the industry. Prices are tending to increase, if anything, he said.

However, he observed, price frequently isn't the determining factor in choosing a network.

Although there may be some future applications for which transaction pricing might be desirable, Tymshare currently does not use this pricing method, he said.

Last summer Tymshare received an unexpectedly large response when it cut in half its rates for work processed during nonprime-time hours.

With the trend toward remote batch type of work rather than straight interactive jobs, many users took advantage of the price break, he said. The initial effect was to lower revenues for the next quarter, but by now the firm's earnings are continuing to improve, he added.

One reason why Tymshare decided to introduce lower prices for nonprime-time was that it sought to avoid adding more CPUs by leveling the workload.

Control Data Corp. raised prices on its data services an average of 8.5% between December and January. The firm cited increasing costs of labor and materials as the reason.

Bill Bird, president of Intel Corp.'s Data Services Group, sees industry prices remaining fairly stable.

The industry is based around a semifixed-cost item and, as volume increases, profits should also rise, he said, so he sees no reason to increase prices.

Bird cited pressures from the decreasing costs of minis. "Companies like ours with on-line services are going to have to think twice about increasing prices so we don't force people off our systems to get their own.

However, Bird doesn't anticipate prices will drop.

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Database service to link United States, United Kingdom computerized files

NEW YORK — Stores of computerized information in the United States and in the United Kingdom will soon be accessible to users in those countries via Western Union International's new Database Service (DBS).

Recently authorized by the Federal Communications Commission, DBS will permit doctors, scientists and businessmen to access databases over the public telephone network connected to a special transatlantic system.

Within the U.S., DBS will initially be available through Tymnet, Inc.'s, domestic network, and directly through Western Union International, a U.S. international communications carrier not affiliated with the domestic telegraph company. Interconnection on additional domestic networks is expected in the near future.

Computerized information retrieval services were introduced in this country several years ago. They allow a subscriber to

have immediate access to the latest research in hundreds of specialized fields by requesting the information at a typewriter-like terminal device. In 1970, 150,000 such database searches occurred in the U.S. by 1975, the number had mushroomed to over one million. With the introduction of DBS, these U.S. databases will become accessible to people overseas.

Perhaps the best known of the information retrieval services is the National Library of Medicine's "Medline," which provides the medical industry throughout the United States — and now throughout the U.K. as well — with immediate access to the most current medical data available. In addition, private organizations, such as Lockheed and System Development Corporation offer computerized libraries in such fields as business, economics, energy and geology.

DBS is tailored to businesses and other organizations that need periodic access to overseas computer facilities for short streams of information. Its volume-sensitive rates include \$1 per six-minute connection and 50 cents per 1,000 characters transmitted, with a minimum charge of \$6 per use.

DBS also provides international data communications access for in-house remote computing. Thus, multinational corporations can access their own computer facilities across the Atlantic for such applications as order entry, inventory control, billing, payroll and sales statistics.

DBS is compatible with data terminals operating from 110 to 1,200 bits/second.

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Users Benefit With Rate Reductions

FCC Tariffs Tymnet as Second Public Packet Carrier

By Ronald A. Frank
Of the CW Staff

CUPERTINO, Calif. — Tymnet, Inc. has become the second public packet carrier to serve U.S. users after approval of its first tariff by the Federal Communications Commission (FCC).

Tymnet began operations in 1971 and had been providing service under joint use and sharing arrangements until it was authorized to operate as a carrier last December. Telenet Communications Corp. was the first packet network carrier to gain FCC approval.

About 50 users of the Tymnet packet network will be affected by the change to a tariffed service; most will receive a 10% to 20% rate reduction depending on the volume of data transmitted, according to a Tymnet spokesman.

The reductions will be made possible by discounts based on volume included in the tariff.

The carrier also received FCC approval to increase its network from 63 to 111 metropolitan areas. The network now includes 26 high-density, 47 low-density and 38 foreign exchange areas.

The public packet net includes 70 intelligent nodes served by a network processor. Unlike other networks, only three Tymnet nodes are nonintelligent and operated with multiplexers, the spokesman noted.

Most processors in the network are supplied by Varian Data Systems and include

620s, V72s and V73s. More recent nodes have Interdata 7/32 processors.

At present, the network does not provide an X.25 interface, but discussions are being held with the Trans-Canada Telephone System (TCTS) to offer a link to the Canadian Datapac net, the spokesman said.

Tymnet service is provided for a single user or up to 256 users from the same organization with monthly charges for host processor interfaces ranging from \$100 for a single user to \$2,750. As many as four host processors for one organization can be accommodated by a single interface, Tymnet said.

Measured usage charges for 110- through 1,200 bit/sec service are composed of connect time, ranging from \$1 to \$5 per hour depending on location and numbers of hours monthly, and character volume transmitted monthly. Cost per 1,000 characters transmitted ranges from 3 cents to 10 cents, depending on volume and transmission speed.

Users can elect dedicated host ports, rather than measured access and characters, at a cost ranging from \$300 to \$650 monthly depending on the number of ports used, the spokesman added.

An expanded message-switching service with store-and-forward capability will be introduced soon.

Tymnet is at 10261 Bubb Road, Cupertino, Calif. 95014.

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